FT13

Current Evidence in Age Specific Nutrition

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The childhood is a period, in which the physical growth and development increase, bone development accelerates, life-long behaviors are gained, and the foundation of certain chronic diseases that might be related with the nutrition is laid. The nutrition in childhood is very important for maintaining the optimal growth, gaining healthy dietary habits, and preventing the health problems that may arise in adulthood. The current evidences about the nutrition in childhood period have been discussed within the scope of nutrition-related problems frequently observed in the childhood period. Some of the important problems in toddlers, pre-school and school children are food allergies, atopic diseases, rejection of certain foods, child with poor appetite, caries, and obesity, whereas the problems seen in adolescence are obesity, vegetarian diets, and micro and macro nutritional deficiencies. Moreover, malnutrition is considered to be an important problem among children having chronic disease and/or hospitalized.

The caries is one of the important nutrition-related problems starting to be seen since the early childhood period. Nutrition and oral health are closely related with each other. Insufficient energy and protein intake may delay the tooth eruption, affect the tooth size, and cause dysfunction of the salivary gland. The micronutrients (such as calcium, Vitamin D, and fluor) are also vital for the development of oral structure, as well as protecting it. Poor oral health negatively influences the nutritional status of child and it finally results in an increase in the risk of nutritional deficiency. The main reasons for early childhood caries (ECC) are long-term exposure of teeth to sweetened liquids (formula, juice, or sweetened beverages) and the bottle-feeding during bedtime and drowsiness period. Especially the children, who can hold the nursing bottle on their own, and the children, who can easily access to the bottles containing water or sweetened fluids during the daytime, are under high risk.[1] The breast-fed babies are under a lower risk. The main strategy in the ECC is the education to be given to the parents. Leaving the use of bottle since 1st age, serving the juices and fluids other than milk or formula, preventing the sleep of babies with bottle in their mouth, and informing the parents about the early diseases that may develop are also important. The family should be informed of tooth-brushing and fluoride application. Moreover, the most important education to be given is the briefing about the amounts of sugar to be consumed and the content of snacks. In year 2017, the European Society for Pediatric Gastroenterology Hepatology and Nutrition (ESPGHAN) published a guideline about the sugar intake of babies, children, and adolescents.[2] Moreover, ESPGHAN recommends interventions aiming to decreasing the free sugar intake of babies, children, and adolescents (public educations on the effect of high intake of free sugar and benefits of reducing the intake of free sugar for the health, designing the labels of food and beverage products in order to warn the consumers about freeing the sugar content, limitations on marketing and advertisement of sugary products, standards on limiting the free sugar in pre-school and school meals, taxes on sugary products, and fiscal measures taken for encouraging the healthy foods, and etc.).

In the previous studies, it was argued that nutrition-related behaviors such as consuming the sugary foods in early-childhood period are related with obesity in childhood and adolescence.[3] In a study carried out on 477,620 children (aged between 2 and 13 years) in 28 countries, the rate of obesity was reported to vary between 15.8% and 25.6%.[4] In PROFIT[5] study examining

the long-term effects of breastfeeding, it was reported that breastfeeding improved the cognitive development at the age of 6.5, reduced the behavioral feeding problems at the age of 11.5, and decreased eczema at the age of 1 but had no effect on the obesity. However, in some of previous meta-analyses, it was stated that there is a relationship between breastfeeding and overweight and obesity in childhood and adolescence periods, it decreases obesity by approx. 13%, and it is a protective factor for childhood obesity and type-II diabetes.[6,7] In ESPGHAN, there is a consensus that, although the breast milk doesn't have a strong protective effect on the obesity, feeding only with breast milk for 6 months (or minimum 4 months) and maintaining the breastfeeding together with complementary foods for 1 year or longer should be encouraged.[8]

Skipping the breakfast is very frequently observed especially among the school-age children and adolescents. In a previous study, it was reported that skipping the breakfast is related with poor lipid profile, blood pressure levels, insulin resistance, and development of metabolic syndrome, and obesity.[9] As one eats out more frequently, the amount of, sweetened beverages, trans fat, and total energy intakes increases and the consumption of low-fat milk, fruit, and vegetables decreases. There is a strong relationship between the low level of fruit and vegetable consumption together with a high level of energy intake and overweight since the age of 1. This suggests that healthy dietary habits should be initiated since the early periods. Low level of fruit and vegetable in babyhood caused low levels of fruit and vegetable consumption at the age of 6.[3,10]

In a childhood obesity study carried out in our country (COSI-TUR-2016), it was determined that the prevalence of obesity among children aged 7-8 years is 24.5%. According to the data of TNSA 2018, it was determined that obesity is observed in 8% of children aged younger than 5 years. In this parallel, World Health Organization (WHO) recommends encouraging the access of children to healthy foods, and interventions aiming to decrease the high-fat, sugar, and -salt foods (HFSS) and acidic beverages by children and young individuals. The effect of advertisements on nutrition especially in the school-age and adolescence periods was emphasized. As a result of the reports of Vienna Declaration on Nutrition and Non-communicable Diseases in the Context of Health, the World Health Organization's (WHO) Food and Nutrition Action Plan, and the Commission on Ending Childhood Obesity, it was determined that the most frequently seen product category on the TV Ads is the foots with the share of 32.1%; majority of the food advertisements consist of high-energy HFSS foods, sugary beverages, and restaurants. Moreover, it was also determined that the shares of advertisements of healthy foods in parallel with WHO's nutrition profile model were 21.2% for TV Ads and 25.6% for the online Ads. 68% of the foods advertised on TV are unhealthy ones. The food products most frequently advertised on the company webpages are chocolate (25.6%), cakes, cookies, and pastry products (13.7%), and non-alcoholic sugary beverages (14.5%).[11]

In this parallel, in order to avoid and prevent the obesity, it is recommended to support the breastfeeding, increase the consumption of fruit and vegetable, have children do 60-min exercise on daily basis, perform routine check-ups (body weight, height, and BMI), limit/forbid the consumption of sugary foods and beverages until the age of 2, introduce vegetables, fruits, legumes, fat-free meat, fish, poultry, and egg, limit the time spent in TV, PC, and video-games, prevent snacks eaten while watching TV, prefer healthy foods over the foods containing high fat, energy and fructose and advertised on TV, and develop healthy dietary habits. Moreover, the lunches in schools should contain menus compatible with nutrition guidelines, the menus containing less fat and more fruit, vegetable, and wholegrain should be prepared, and the children should be canalized to fixed menus rather than processed foods containing additives. The sugary drink and food automates should be removed, and the nutritional education, physical activity, campus dining areas, and other school-based activities to support the healthy lives of children should be addressed. In order to protect from obesity, the food services in the school

should be coordinated with school health programs and nutritional school policies, the nutrition-friendly program should be provided to whole school, and continuous supervision should be performed on regular basis. Moreover, a copy of school's menu program should be given to the families and the dinners should be prepared considering this list by using different food groups, the breakfast should not be skipped, and the healthy snacks such as fruit, milk, yogurt, and dried fruits should be preferred over sugar, chocolate, and etc. causing obesity and caries, and the children and their families should be given education addressing the importance and necessity of healthy and balanced diet at the early ages. The dietary preferences, dietary habits, and obesity rapidly develop at the age of 2. For this reason, the education to be given to the families is very important.[10-15]

The other important problems that might be seen in the childhood period are the child with poor appetite, child eating insufficiently, child eating one type of food, and child anxious about eating. The family, character, and culture have a significant effect on the child's dietary habits. Controlling the nutritional behaviors of family should a part of approach for treating the child with poor appetite. Child-parent interaction plays an important role in determining a child's eating style (selective eating, emotional eating). It was found that there is a relationship between parents' nutritional strategies and children's energy intake, diet quality, and body weight. Overprotective and authoritarian parents show similar patterns in parenting practices such as observing the children's healthy food consumption and making healthy food available. Besides that, similar to the authoritarian parents, the overprotecting parents use higher pressure for eating or more limitation for weight control. The authoritarian parents frequently use methods such as controlling the nutritional behaviors of child, emotion regulation, controlling the food consumption for weight control, and "carrot-and-stick" approach in nutrition. These authoritarian practices generally affect the food consumption of children negatively. Although forcing is effective in the short-term, it affects the self-control skills of child in the long-term and increases the risk of obesity.[16-20] The families should be informed and encouraged about developing the healthy dietary habits of children.
Following the infancy period, the second most rapid growth is observed in the adolescence period and, thus, adequate nutrition is very important for the development to achieve its full potential in this period. 25% of the world population consists of 10-24-year-old individuals. This group of individuals constitutes the healthiest and most productive segment of their own societies. The adolescents are an important population for nutritional interventions aiming to encourage healthy behaviors such as healthy nutrition. The dietary habits and nutritional behaviors in the adolescence period were related to both physical health and mental health. A well-designed vegetarian diet is healthy and effective in protecting from several chronic diseases. However, a misapplied vegetarian diet with no diversity may cause insufficient levels of Vitamin d, Vitamin B_{12}, iron, calcium, and Omega-3 fatty acids.[21,22] The vegetarian adolescents and parents should be informed about nutrition and they should consume foods by knowing the contents and enhancing in the way containing sufficient amount of vitamins and minerals. In this period, the "multidisciplinary team" approach is very important; the families should be referred to a specialist dietitian and healthy diet programs should be designed.

Some of the other important problems seen in the childhood period and continuing in the adolescence are food allergies and atopic diseases. On this subject, the most current suggestions of American Academy of Pediatrics are as follows;[23,24,25]

- There is a lack of evidence to support maternal dietary restrictions either during pregnancy or during lactation to prevent atopic disease.

- There is evidence that exclusive breastfeeding for the first 3 to 4 months decreases the cumulative incidence of eczema in the first 2 years of life.
- The evidence now suggests that any duration of breastfeeding beyond 3 to 4 months is protective against wheezing in the first 2 years of life.
- There is now evidence that the early introduction of infant-safe forms of peanuts reduces the risk of peanut allergies. Data are less clear for timing of introduction of eggs; and
- The new recommendations for the prevention of peanut allergy are based largely on the LEAP trial and are endorsed by the AAP. An expert panel has advised peanut introduction as early as 4 to 6 months of age for infants at high risk for peanut allergy (presence of severe eczema and/or egg allergy). The recommendations contain details of implementation for high-risk infants, including appropriate use of testing (specific IgE measurement, skin-prick test, and oral food challenges) and introduction of peanut-containing foods in the health care provider's office versus the home setting, as well as amount and frequency.

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